BACHELOR PROGRAMS

CREDIT HOURS SYSTEM

CAIRO UNIVERSITY
FACULTY OF ENGINEERING

2021-2022

FACULTY OF ENGINEERING PROGRAMS
CAIRO UNIVERSITY

CUFE

The **Faculty of Engineering – Cairo University** has a profound historical background - the first engineering college in the Middle East and Africa where the school was established during the reign of Mohamed Ali in 1816 - and since its launch, it has been associated with the largest French and Swiss engineering schools in the world at that time. Its highly efficient and competent Graduates have greatly participated in solving many of the problems of the community and are always part of the development of the industry and the establishment and enhancement of infrastructure and service of national projects. Graduates have widely joined universities and international research institutions and have held high positions not only in the engineering field, but also in many fields, including politicians, economists and businessmen.

Globally developed, CUFE is currently one of the largest universities in Africa and the Arab world where there are many disciplines to meet the demands of society and age: starting with four major engineering disciplines in the early century – to reach now 24 Engineering degrees in the two current adopted systems : The Two-Semester System, where principal engineering programs are available, as well as the Credit-Hour System, where the interdisciplinary and specialized programs are offered.

CAIRO UNIVERSITY
FACULTY OF
ENGINEERING

The Faculty's specializations and fields of study vary from **14 academic departments** to **15 specialized centers**. The faculty also offers **71 postgraduate programs- PG-** in various engineering and environmental disciplines, offering **diplomas, master's degrees, doctorates degrees, and professional and inter-disciplinary diplomas.**

VISION

Excellence and leadership in engineering education nationally, regionally and internationally to better serve individuals, society and environment.

MISSION

Achieve academic excellence to graduate competitive engineers, academically, professionally and ethically capable of continuous learning, in line with international innovations and effective contribution to sustainable development in Egypt.

STRATEGIC GOALS

- Develop renowned and competitive graduates.
- Provide attractive work environment suitable for continuous improvement of faculty members and assistants.
- Develop a system to assess strategic needs and the future directions of the faculty of engineering.
- Strengthen the relationship between the faculty of engineering and alumni, industrial enterprises, educational institutes and society.
- Upgrade and enhance work systems and procedures for administrative and academic developments.
- Realize means for continuous improvement of scientific research and graduate studies.

GRADUATE ATTRIBUTES

- Apply basic principles of mathematics, science and engineering concepts to solve engineering problems.
- Observe, define and solve engineering problems.
- Use modern methods and tools suitable for the practice of engineering.
- Design systems, components and processes appropriate to achieve an engineering goal in a realistic framework.
- Recognize the impact and problems of engineering applications on society and the environment.
- Design and perform appropriate laboratory experiments and analyze and interpret their data.
- Understand contemporary engineering issues.
- Work efficiently in a multidisciplinary team.
- Commit to professional ethics and social and cultural responsibility.
- Effectively communicate orally and in writing.
- Appreciate the importance of self-learning and professional life.
- Successful manage engineering projects in the context of various economic, environmental and social constraints.
- Achieve the requirements of potential employers.

FACULTY OF ENGINEERING PROGRAMS
CAIRO UNIVERSITY

CUFE

QUALITY OF ENGINEERING EDU.

According to the ENGLISH ranking classification "QS 2021", Cairo Uni. is ranked 166th on the world and 1st in Africa And Egypt, Architecture: 151-200, Civil Engineering: 51-100, Chemical Engineering: 201-250, Computer: 151-200, Electronics and Electrical Engineering: 151-200, & Mechanical Engineering, Aviation & manufacturing: 201-250.

Faculty of Engineering is nationally accredited as an institution from "The National Authority to Ensure the Quality of Education and Accreditation" (NAQAAE) in March 2016 for a period of five years. The Communications Department received the national accreditation in May 2013 for five years and the renewal in 2018.

The ARCHITECTURE program, the two-semester system, is revalidated by the UNESCO-UIA VALIDATION EDUCATION COMMITTEE in October 2017 for a period of five years; as well as, the AET program, CH system, is validated in October 2019 by the same body for five years.

CREDIT-HOURS SYSTEM PROGRAMS

AEM	Aero. Eng. & aviation Management
AET	Architectural Eng. & Technology
CCE	Communication & Computer Eng.
CEM	Construction Eng. & Management
CIE	Civil Infrastructure Eng.
EEE	Electrical Energy Eng.
HEM	Healthcare Eng. & Management
IEM	Industrial Eng. & Management
MDE	Mechanical Design Eng.
MEE	Mechatronics Eng.
MEM	Manufacturing Eng. & Materials
PPC	Petroleum & Petrochemical Eng.
SEE	Sustainable Energy Eng.
STE	Structural Eng.
WEE	Water Eng. & Environment

TWO-SEMESTER SYSTEM PROGRAMS

CUFE offers a bachelor's degree, in Two-Semester System, in one of the following Engineering Disciplines:

1. ARCHITECTURAL ENGINEERING

The Department is one of the oldest departments in the CUFE- and dates back to 1932. The department aims to prepare an architect, a designer and a competent creative practitioner.

2. CIVIL ENGINEERING

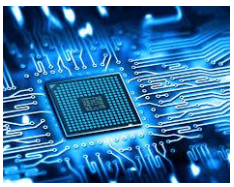
The Civil Engineering program is divided into three main sections: Structural Engineering, Irrigation and Hydraulics, and Public Works.

3. MECHANICAL POWER ENGINEERING
4. MECHANICAL DESIGN & PRODUCTION

The Department was established in 1916 at the Mohandes-khana School. In 1926, the electricity specialization was added to it.

5. ELECTRICAL & COMMUNICATION ENG.

A program for students who wish to obtain higher education certificates to join the largest universities in the world as well as major local and international companies.



6. ELECTRICAL POWER & MACHINES ENG.

The Graduates are qualified according to international standards and compete with their peers in the local and international professional market in the field of Electric Energy.

7. CHEMICAL ENGINEERING

Students learn about industrial processes and design and control the performance of their systems in terms of dealing with raw materials and products within the industrial establishment.

8. GEOLOGICAL ENGINEERING & MINING
9. PETROLEUM ENGINEERING
10. METALLURGICAL ENGINEERING

The Department includes the three disciplines: Mining, Petroleum and Metallurgical Engineering

11. AEROSPACE ENGINEERING

Aerospace Engineering program was launched in 1938 and deals with physical laws and aerospace techniques in space and atmosphere.

12.SYSTEMS & BIOMEDICAL ENGINEERING

The department was established in 1976 and it seeks excellence in the fields of medical engineering in terms of education, scientific research and innovation through the creation and transfer of knowledge.

13. COMPUTER ENGINEERING

The latest departments of CUFE and participates actively in the community and in the field of technology.

BACHELOR PROGRAMS, CREDIT HOURS SYSTEM
CAIRO UNIVERSITY, FACULTY OF ENGINEERING

Since nineteenth century, the Faculty of Engineering at Cairo University (CUFE) aims to provide learning opportunities in the fields of engineering sciences and high quality technical applications to students at the local, regional and global levels. This is in order to participate in developing the community. To keep abreast of global developments, CUFE has introduced new bachelor programs based on credit hours system since 2006.

The credit hours system adopts more efficient learning framework in terms of teaching methods, assessment tools and class capacity. In addition, collaboration with universities abroad to increase the competitiveness of graduates globally and raise the quality of engineering education. Currently, there are 15 programs in the credit hours system:

1) Aero. Eng. & aviation Management (AEM).
2) Architectural Eng. & Technology (AET).
3) Communication & Computer Eng. (CCE).
4) Construction Eng. & Management (CEM).
5) Civil Infrastructure Eng. (CIE).
6) Electrical Energy Eng. (EEE).
7) Healthcare Eng. & Management (HEM).
8) Industrial Eng. & Management (IEM).
9) Mechanical Design Eng. (MDE).
10) Mechatronics Eng. (MEE).
11) Manufacturing Eng. & Materials (MEM).
12) Petroleum & Petrochemical Eng. (PPC).
13) Sustainable Energy Eng. (SEE).
14) Structural Eng. (STE).
15) Water Eng. & Environment (WEE).

Credit hours system is characterized by:

- A high degree of flexibility. Student can prepare a study plan to suit his / her academic level and circumstances.
- An electronic system to enable online registration of courses and follow-up of student performance and attendance of educational activities.
- The support of CUFE staff who have distinctive scientific and professional experiences.
- Advanced curricula to earn students basic & specialized knowledge & skills.
- Opportunities for industrial training in the local market.
- Various scholarships for outstanding students in high school.

Since 2016, CUFE is accredited by the National Authority for Quality Assurance & Accreditation of Education (NAQAAE). Besides, starting from 2019 The Architectural Engineering & Technology Program (AET) acquired five years full re-validation from UNESCO-UIA validation system for architectural education.

CUFE staff are welcoming contacts through the following:

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(+202) 35678928 / (+202) 35696114
(+202) 35678082 / (+202) 35678587
Fax: (+202) 35723486
Website:
eng.cu.edu.eg/en/credit-hour-system/

BACHELOR PROGRAMS, CREDIT HOURS SYSTEM
CAIRO UNIVERSITY, FACULTY OF ENGINEERING

Giza Campus

جامعة القاهرة

التخطيط العام لكلية الهندسة

رقم المبنى	
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المبنى الادارى	٢
مبنى الهندسة المعمارية والاشغال العامة والهندسة الحيوية الطبية والمنظومات وهندسة الحاسبات	٣
مبنى الهندسة المدنية	٤
مسجد الكلية الرئيسى	٥
مدرج الساوى	٧
مبنى هندسة الالكترونيات والاتصالات الكهربية	٨
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مبنى التصميم الميكانيكى والانتاج	١٠
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مبنى هندسة القوى الميكانيكية (مبنى الحراره)	١١
مبنى نادى الكلية	١٢
ورش الكلية	١٣
مبنى هندسة القوى الميكانيكية (سيارات)	١٩
مبنى الرياضيات والفيزيقا الهندسية	٢٠
مبنى الرى والهايدروليكا	٣١
مبنى هندسة المناجم والبترول والفلزات	٣٢
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معمل خواص المواد	٣٠
ورشة معمل خواص المواد	٣٠
معمل ابحاث ميكانيكا التربة والاساسات	٣٤
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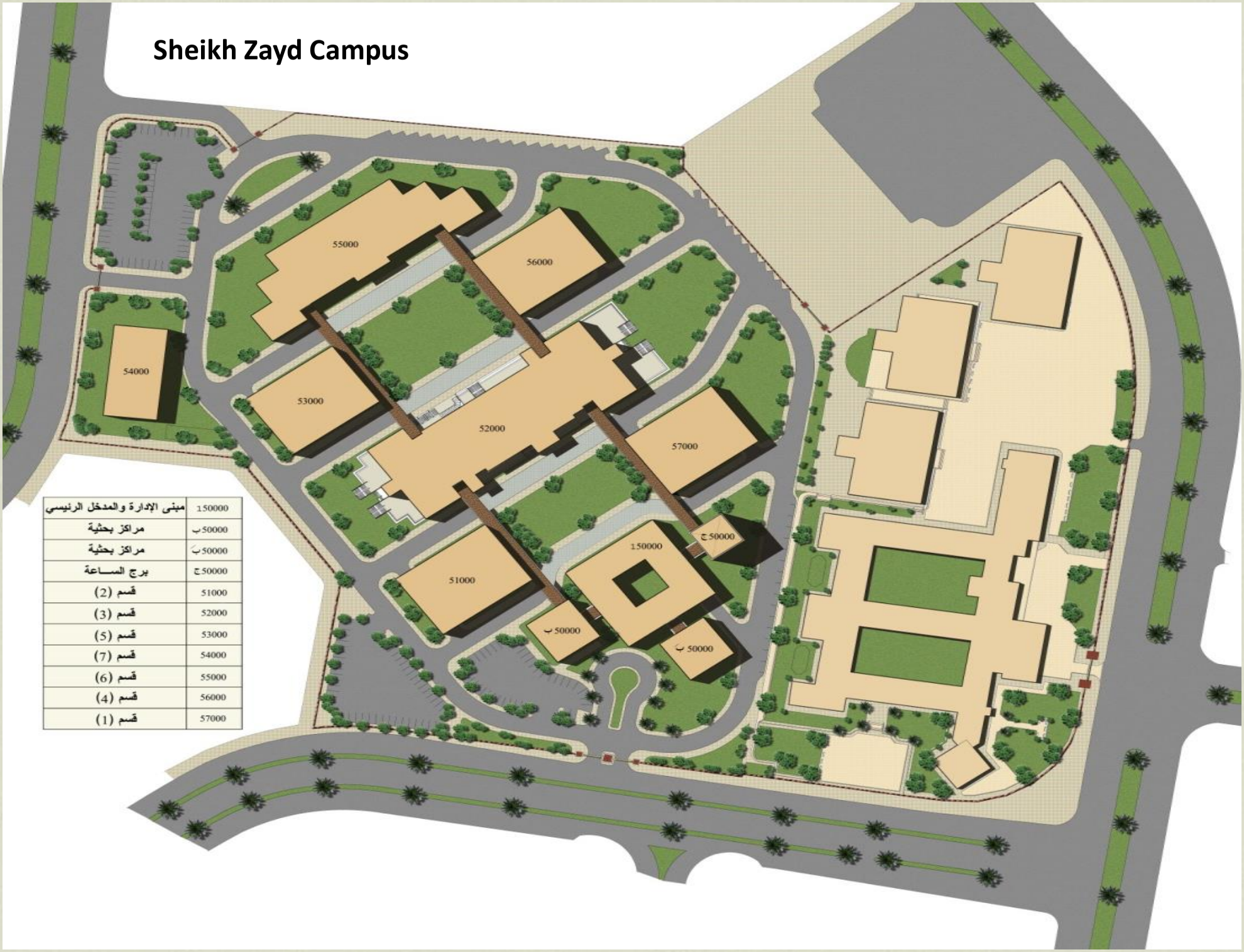
مبنى خرسانة	٣٥
مخازن	٣٧

Sheikh Zayd Campus



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قسم (6)	55000
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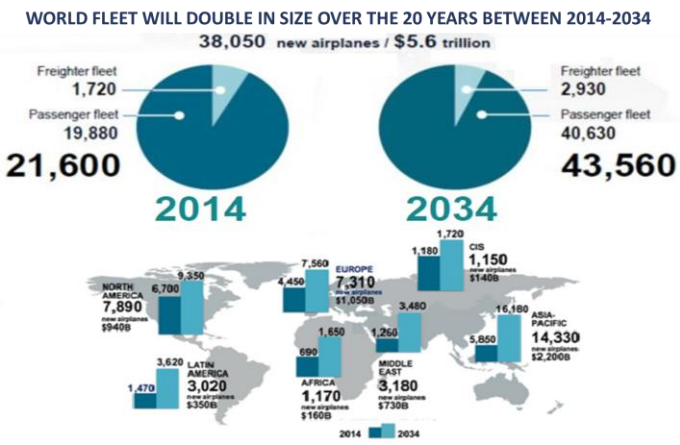
قسم (1)	57000

AERONAUTICAL ENG. & AVIATION MANAGEMENT [AEM]

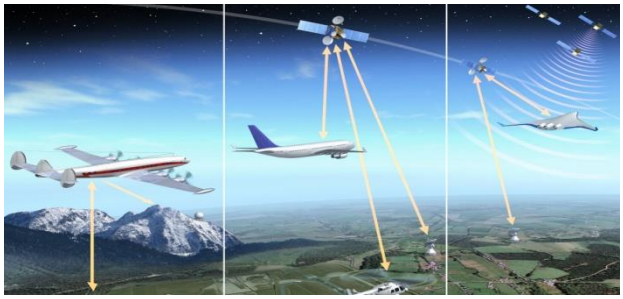
Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

Air transport environment in Africa and MENA region is witnessing a tremendous revolution. There is an increasing demand for air transport for both passengers and goods. According to Boeing during the 2014-2034 period the passenger traffic and fleets will almost twofold. This results in an increased demand for highly qualified Aeronautical and Aviation engineers whom will be provided by this program.



Key Features:

- **Major courses in aeronautical engineering and management, including airframe analysis, aircraft engines, aerodynamics, flight mechanics and control, project management, and airports and aviation economics.**
- **Elective courses providing the students with deep understanding of Aeronautical Engineering and Management.**
- **Use of different software and latest technologies in Analysis, Maintenance, and Aviation Management.**
- **Preparing students, through training for working in aviation companies.**



For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/
Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

Program Objectives:

- **Provide engineers with sufficient engineering background and the ability to predict, detect, assess, design maintenance procedures, plan and supervise repairing aircraft damage and maintain aircraft fleet availability as per the Civil Aviation Authorities requirements.**
- **Prepare engineers to manage Air-transport maintenance departments with appropriate knowledge in management, human resources, and operations research.**
- **Prepare a graduate who is capable to operate and manage airports.**

AEM Engineers:

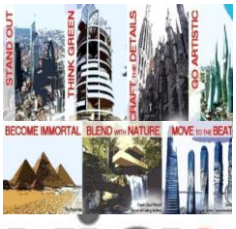
- **An engineer with management capabilities working in airlines, airports or other companies within the aviation industry.**
- **He may manage or maintain aircrafts in an airliner or manage the day-to-day operations of an airport or airline organization.**

ARCHITECTURE ENGINEERING & TECHNOLOGY

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

This new bachelor program is based on the credit hours system (CHS) prepares the students in a number of streams to examine the art of architecture and the science & technology within the building construction profession to be considered a multidisciplinary field that integrates architecture, engineering, technology and management of people and physical resources. As such, AET graduates would be able to carry out successful design and to develop, construct and operate residential, commercial and public properties. The program is internationally validated by UNESCO-UIA validation system for architectural education Besides, In 2021, the program is accredited by the National Authority for Quality Assurance & Accreditation of Education (NAQAAE). Program Vision: leadership in the architecture & building technology education to achieve excellence and development of sustainable community and built up environments.

AET
قسم الهندسة المعمارية
2021 DEPARTMENT OF ARCHITECTURE
FACULTY OF ENGINEERING - CAIRO UNIVERSITY



Key Features:

- The value of the program supports Excellence, Open Discourse Activities, Inclusiveness, Cooperation, Inter-Disciplinary Experience and Responsibility towards Community.
- Providing Extra-Curricular Activities: Public Lectures, Field Trips, Workshops & Publications.

Program Objectives:

The AET program focuses on providing a comprehensive and holistic approach to learning. Architectural Engineering at Cairo University is situated to address the critical environmental and building design issues needed in the 21st Century. We are committed to providing education in architecture science and technology that stresses exploration of critical issues in a learning environment that is conducive to meaningful inquiry and creativity.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

COMMUNICATION & COMPUTER ENGINEERING [CCE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The mission of the Communications and Computer Engineering Program is to provide the highest standard of excellence in higher education while pursuing continuous quality improvement. The Goal of our program is to produce communications and computer engineers capable of effectively using the scientific and technical knowledge developed as undergraduates for the betterment of society. The problem-solving, teamwork, and oral communications skills developed by these engineers will also contribute to achieving this goal. The program supports this mission by providing students with appropriate curricula and educational experiences. The curricula remain current through continuing assessment by employers, faculty, and students. Students obtain a broad education necessary to understand the impact of communications and computer engineering solutions in a global, societal, and environmental context. In 2021, the program is accredited by the National Authority for Quality Assurance & Accreditation of Education (NAQAAE).

Key Features:

The Bachelor of Science degree program is highly structured during the first three years and relatively flexible during the upper two years where the student chooses a technology track towards either communication (CCE-E) or computer (CCE-C) for training and graduation project along with necessary and elective courses. The program provides a laboratory-based curriculum that combines hands-on practice with the appropriate basic electrical and electronic theory. It is applications-oriented and is designed to prepare well rounded graduates who can succeed in one or more of the fields related to communications and computer engineering technology.

Program Objectives:

- **Provide students with understanding of the fundamental knowledge prerequisite for the practice of, or for advanced study in, communications or computer engineering, including its scientific principles, rigorous analysis, and creative design.**
- **Provide students with the broad education, including knowledge of important current issues in communications or computer engineering, necessary for productive careers in the public or private sectors, or for the pursuit of graduate education.**
- **Develop skills for clear communication and responsible teamwork, and to inculcate professional attitudes and ethics, so that students are prepared for the complex modern work environment and for lifelong learning**
- **Provide an environment that enables students to pursue their goals in an innovative program that is rigorous and challenging, open and supportive.**

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering,
Giza, Arab Republic of Egypt.

CONSTRUCTION ENGINEERING & MANAGEMENT [CEM]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The program provides the necessary knowledge and tools to manage the design, procurement, construction and operation of buildings, infrastructure systems and industrial facilities. Graduates of the program are well-positioned to become construction project managers and construction management consultants working for contractors, developers and owners of constructed facilities. In 2021, the program is accredited by the National Authority for Quality Assurance & Accreditation of Education (NAQAAE).

Key Features:

- Close industry collaboration.
- Exposure to the construction industry in the MENA region through summer internships.
- Prepares graduates to manage international construction projects.
- Study complemented with business & management courses.

Program Objectives:

The main goal of the CEM Program is to provide a well-integrated program that gives the student the opportunity to develop the proficiencies necessary for a successful, professional career in the construction industry. In addition to exposure to courses in civil engineering and design, program graduates will develop knowledge and understanding of:

- develop management plans for construction projects.
- reviewing the contract strategies for construction projects and to investigate the appropriate contract forms and payment methods.
- planning and control project cost: including cost estimating, risk analysis, contingency, progress reporting, and value engineering.
- producing tender and contract documents along with the ability to carry out estimation of costs and expenditures during all project stages.
- carrying out appraisal of tenders and to negotiate with bidders.
- supervising constructions projects & monitoring progress.
- measuring the executed work, and certify interim payments and final account.
- advising clients on settling claims and disputes.
- handing over completed construction projects along with their designated maintenance & operational plans.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering,
Giza, Arab Republic of Egypt.

CIVIL INFRASTRUCTURE ENGINEERING [CIE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The field of Civil Infrastructure Engineering is by far the most growing and demanding field in the construction market in Egypt and the Middle East. The CIE graduate will work in the design, construction, operation, and rehabilitation of civil infrastructure projects including transport, highways and airports, railways, water and wastewater, surveying, and geotechnical engineering.

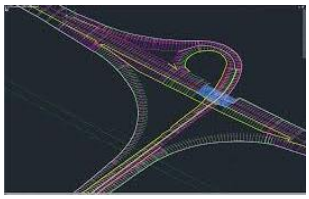






Key Features:

- **Core courses specialized in the design of different infrastructures facilities: roads, highways, airports, railways, water and wastewater treatment plants, water distribution networks, sanitary sewers, tunnels, & bridges to satisfy the community's needs.**
- **A variety of elective courses providing the students with deep understanding of the different facilities' design and operation.**
- **Use of different software and latest technologies in the analysis and design of infrastructures facilities.**
- **Practical training opportunities in multinational design and construction companies, & consultancy firms.**




Program Objectives:

- **Providing students with strong knowledge, and proficient skills in the design, operations, maintenance, and rehabilitation of civil infrastructure projects.**
- **Equipping graduates with appropriate technical proficiency to lead interdisciplinary teams working for sustainable civil infrastructure projects.**
- **Bridging the gap between academic knowledge and practical experiences through hands-on experiences and exposures to large-scale civil infrastructure projects.**
- **Enhancing the soft and leadership skills that are necessary for a successful professional career.**

CIE Engineers:

- **Make people's life easier by supplying potable water, collecting and treating wastewater, constructing highways and airports, railways & metro.**
- **Build the base for all large development projects.**

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering,
Giza, Arab Republic of Egypt.

ELECTRICAL ENERGY ENGINEERING [EEE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

Industrial development, population growth, and demand for electrical energy cannot be achieved without well prepared expertise in Electrical Power Engineering, Computer and Electronics, and Industrial Applications. The goal of the EEE program is to provide the community with graduates capable of effectively using their scientific & technical knowledge in these areas for the betterment of the society. The program provides the highest standard of excellence in education while pursuing continuous quality improvement. In 2021, the program is accredited by the National Authority for Quality Assurance & Accreditation of Education (NAQAAE).

Key Features:

- Core courses in Management, Accounting, and Marketing to supplement the engineering skills.
- A variety of elective courses for students to fit their selected plan of study, with two distinct, yet equally challenging, tracks (1) Electrical Energy (2) Industrial Applications of Electrical Energy.
- Practical training opportunities in multinational design companies and consultancy firms.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

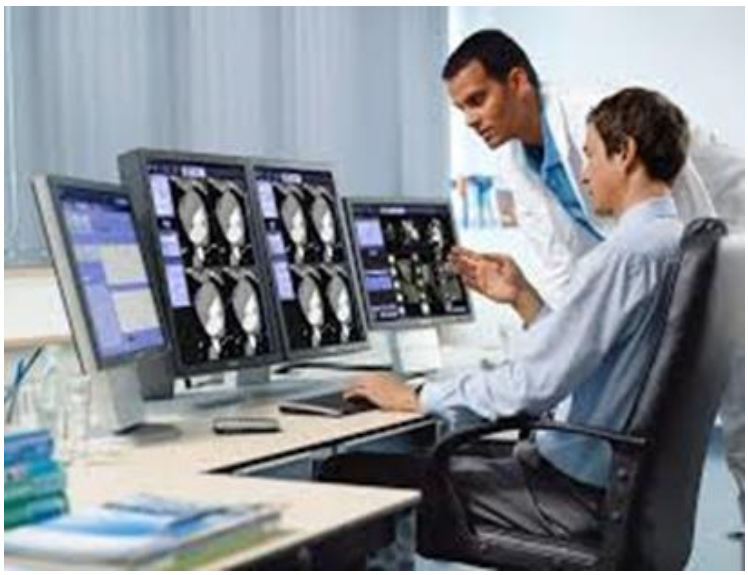
Program Objectives:

- The EEE Program offering education and develops experience in numerous topics in the areas of:
  1) Power engineering.
  2) Power electronics .
  3) Industrial automation including applied computer engineering and communications.
- By the end of the program, students are expected to gain deep knowledge & skill in the design & study of:
  1) Automated and intelligent energy systems.
  2) Electrical machine and drives.
  3) Electronic converters.
  4) Power Systems.
  5) Automatic control systems.
- The curriculum of the EEE program is also devoting special attention to issues that are capturing worldwide attention such as:
  1) Renewable energy.
  2) Smart Grid.
  3) Environmental impact of developments in electrical energy.
- The program includes courses to cope with well observed current graduate weaknesses such as marketing skills, legalities and communications skills.

HEALTHCARE ENGINEERING & MANAGEMENT [HEM]

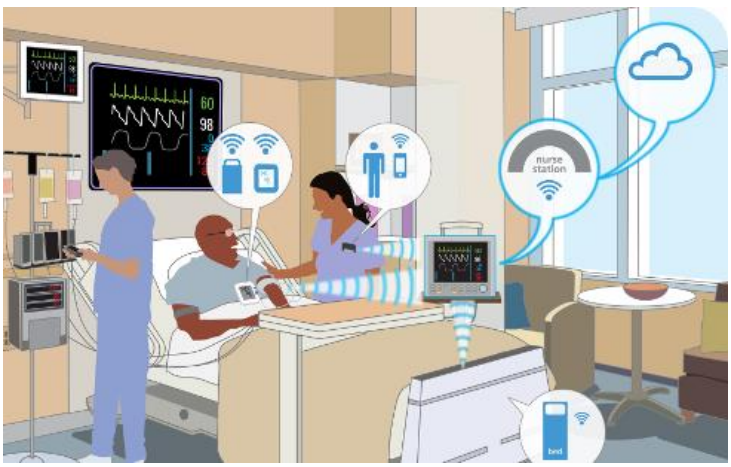
Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The goal of the program is to provide the community with graduates capable of effectively using relevant scientific and technical knowledge in digital healthcare. The program is designed to meet the growing demand for trained engineers who can apply the principles of engineering, health sciences, and business administration. These engineers effectively manage the physical, technological, and support services of healthcare facilities, in order to optimize the safety, quality, efficiency, accessibility, and cost effectiveness of healthcare delivery processes and healthcare systems. It centers on four main themes: healthcare facilities designing & planning, medical standards & accreditation, medical software, healthcare management and healthcare information systems.



Key Features:

The HEM program offers core courses related to the areas of Biomedical Engineering, management, industrial automation, as well as computer engineering and communications. It allows student to select elective courses to fit their desired specialty. Field training is mandatory to face the actual healthcare problems. By the end of the program, students are expected to gain deep knowledge and skills in Healthcare Engineering and Management, managerial systems for healthcare units, automation of healthcare systems and to be able to qualify healthcare units for national and international accreditation.



Program Objectives:

- **To supply Healthcare sector with qualified engineers to fulfill national (and/or regional) strategic plans.**
- **To provide students the fundamental knowledge required for practicing high quality HEM.**
- **Program graduates are expected to serve in the following areas:**
- **Designing modern healthcare facilities and hospitals, based on modern international standards & guidelines for designing, building & equipment supply for such facilities.**
- **Building the underlaying network and software infrastructure.**
- **Management and decision-making support in healthcare facilities based on solid medical informatics infrastructure.**

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

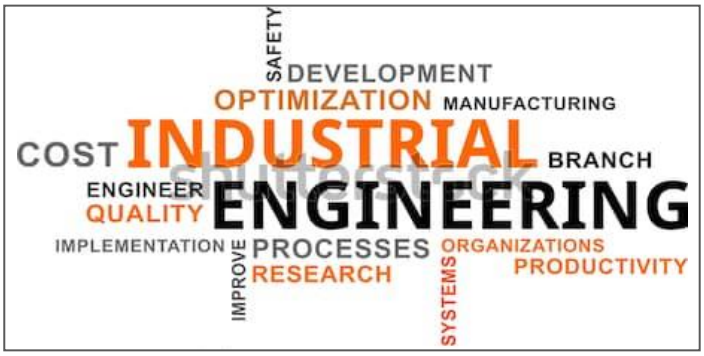
Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

Industrial Engineering and Management [IEM]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The business environment in Egypt is expected to witness an evolution in the various branches of industry at large. Planning and Management of industrial firms, the development and global competitions of industrial institutions need a qualified "Industrial Engineers".

The program offers a B.Sc. degree in Industrial engineering and management for students who seek careers as engineers in industry and consulting firms.



Key Features:

- Typical program curriculum incorporates analytical tools, creative thought and diversity of skills as well as the state of art of the profession.
- Industrial engineer integrate people, machines and equipments, materials, energy, information and money to improve the quality and productivity of systems.
- The qualified Industrial Engineer has knowledge and skills and enabling utilization of modern tools of engineering analysis and modeling.

Program Objectives:

- To provide the students with a solid base of knowledge in science and engineering, readily applicable to solving technical problems, together with the self confidence necessary for doing so.
- To provide the students with broad based professional education that covers the important current and developing issues in mechanical engineering, which is necessary for a productive career, and for being able to search and research in the spirit of continuing education in the field of industrial engineering and allied areas.
- To upgrade the skills of students in effective communication, logic thinking and creativity.

Industrial Engineers:

- Comprehend and handle the integration of management systems into a series of different technological environments.
- Emphasize risk assessment and the impact of uncertainties associated with economic and process decisions in industrial and service sectors.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

MECHANICAL ENGINEERING [MDE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The business environment in Egypt is expected to witness an evolution in the various branches of industry at large. A growing need is anticipated for qualified "Mechanical Design Engineers" with knowledge and skills enabling utilization of modern tools of engineering analysis and design.

The program offers a B.Sc. degree in mechanical design engineering for students who seek careers as engineers in industry, army and consulting firms. A typical program curriculum incorporates analytical tools, creative thought and diversity of skills as well as the state of art of the profession. Mechanical Design engineer may work in where it is required to design, manufacture, operate, develop or maintain mechanical systems and equipment such as; industrial machinery, automotive, aerospace, power generation and air conditioning equipment.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

Program Objectives:

- To provide the students with a solid base of knowledge in science & engineering, readily applicable to solving technical problems, together with the self confidence necessary for doing so.
- To provide students with broad based professional education that covers the important current and developing issues in mechanical engineering, which is necessary for a productive career, & for being able to search & research in the spirit of continuing education in mechanical design field & allied areas.
- To upgrade students skills in effective communication, logic thinking & creativity.

MECHATRONICS ENGINEERING [MEE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The business environment in Egypt is expected to witness an evolution in the various branches of industry at large. A growing need is anticipated for qualified "Mechatronics Engineers" with knowledge and skills enabling utilization of modern tools of engineering analysis and design. The program offers a B.Sc. degree in mechatronics engineering for students who seek careers as engineers in industry, army and consulting firms.

Key Features:

- **A typical program curriculum incorporates analytical tools, creative thought and diversity of skills as well as the state of art of the profession.**
- **Mechatronics engineer may work in areas where it is required to solve problems in the fields of integrated mechanics, electronics, computers and software systems.**

Program Objectives:

- **To provide the students with a solid base of knowledge in science and engineering, readily applicable to solving technical problems, together with the self confidence necessary for doing so.**
- **To provide the students with broad based professional education that covers the important current and developing issues in mechanical engineering, which is necessary for a productive career, and for being able to search and research in the spirit of continuing education in the field of mechanical design and allied areas.**
- **To upgrade the skills of students in effective communication, logic thinking and creativity.**

Mechatronics Engineers:

- **Investigate the interdisciplinary characteristics of mechanical, electrical, and computer systems.**
- **Develop solutions to multidisciplinary industrial problems and participate in the creation of advanced products.**

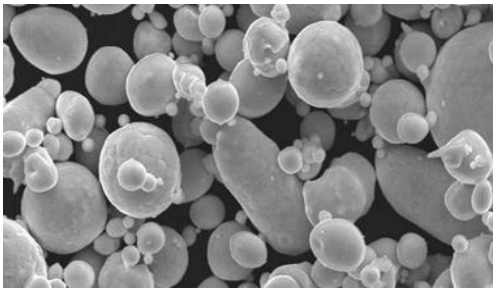
For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

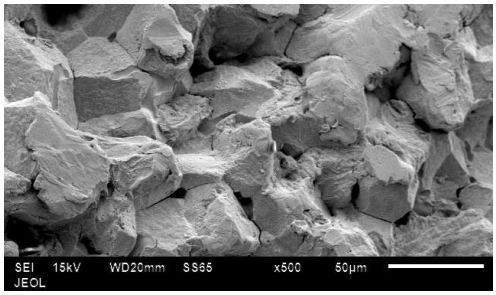
Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

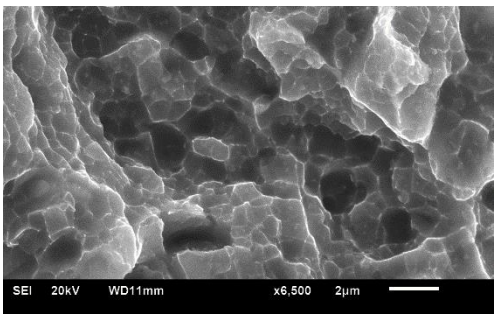
MANUFACTURING ENG. & MATERIALS [MEM]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

Employment opportunities for graduates from Mechanical Engineering majoring in Materials and Manufacturing are in the areas of research and development of new materials and technology to potential breakthroughs in materials field products, design of equipment or systems, supervision of production, maintenance and administration. The program is designed to prepare graduates for the local and international industrial community, through specialized courses in Modern manufacturing processes, Nanotechnology, Processing and fabrication of high strength-light weight metals and composites.

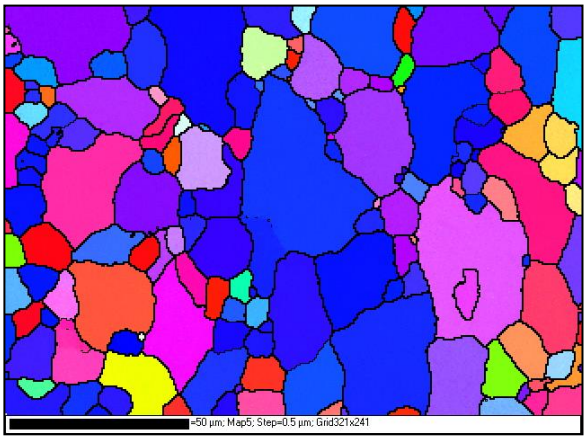






Key Features:

- **Create a multi-disciplinary environment for developing novel materials and their processing techniques, with prospective applications.**
- **Manufacturing and Materials engineer may work in areas where it is required to solve problems in the fields of materials processing, production lines, failure analysis, materials selection in design, design for manufacturing, modern manufacturing processes and development of new materials with novel properties.**



Program Objectives:

- **Employ modern CAD and CAD/CAM facilities in design and production processes.**
- **Select and identify an appropriate material and manufacturing route for the design of a component.**
- **Use appropriate mechanical testing, metallography and chemical analysis methods for characterization of any material category.**
- **Use appropriate computer software for design, simulation and modeling exercises.**
- **Utilize materials engineering principles to develop new materials/processing routes for improved performance of engineering systems.**

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

PETROLEUM & PETROCHEMICAL ENGINEERING [PPC]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The Petroleum and Petrochemical Engineering is a new discipline that integrates knowledge and skills required for both upstream and downstream industries of oil and gas. Graduates will major in either of the following:

- Petroleum Engineering (PPC-P), upstream.
- Petrochemical Engineering (PPC-C), downstream.

The petroleum engineer evaluates potential oil and gas reservoirs, oversees drilling activities, selects and implements recovery schemes, and designs surface collection and treatment facilities
The Petrochemical engineer works in the refining of petroleum crude oil, processing of natural gas and uses petroleum and its derivatives as raw materials to produce useful chemicals.

Key Features:

- Graduates majoring in either upstream or downstream industries of oil and gas will in the same time acquire the background of the other and thus improving fieldwork flexibilities in career development.
- A variety of elective courses in both majors.
- Sufficient background knowledge of basic engineering sciences, economics and safety in addition to project execution and management.
- Courses are taught by instructors having a large experience in oil, gas & related fields.

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza,
Arab Republic of Egypt.

Program Objectives:

- Supplying the petroleum sector with engineers with inter-disciplinary backgrounds. The program aims to:
- Enable students to acquire in-depth knowledge and understanding of both the up-stream and down-stream aspects.
- Develop appropriate intellectual skills required to enable graduates to plan, design, analyze, execute and manage industrial petroleum projects.
- Provide students with the practical and professional skills necessary for employment in the petroleum and petrochemicals field or for further advanced research studies.
- Develop general and transferable skills necessary for understanding of the human relations in industry and impart professional attitudes and ethics enabling the graduates to work in multi-disciplinary teams and interact properly in the professional environment.

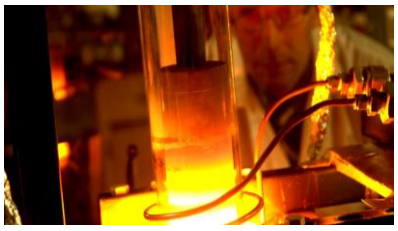
SUSTAINABLE ENERGY ENGINEERING [SEE]

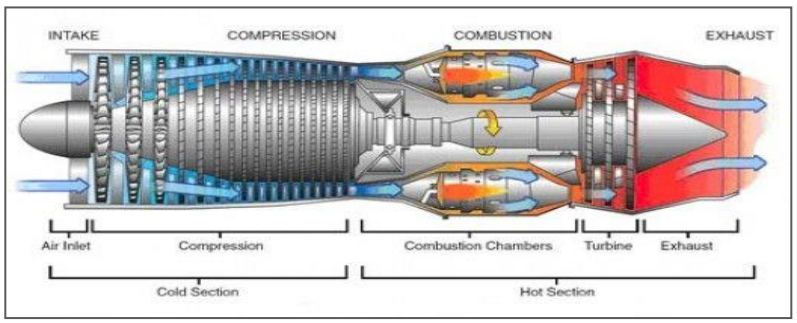
Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The field of Sustainable Energy Engineering is the core foundation of the immediate future growth in Egypt and surrounding region. Egypt is on its way to become the regional energy hub. This would only be possible by the hands of a new generation of qualified engineers in the fields of energy generation from new and renewable resources.

Key Features:

- **A balanced choice of courses that qualifies a first class mechanical engineer with the basic understanding of related subjects in related fields in civil and electrical engineering to serve Mini, large and mega projects related to services and construction and infrastructure.**
- **A specialized emphasis on energy and energy related subjects that are presented in a gradual fashion through a chain of accumulated knowledge and expertise leading the consultancy firms and construction contractors in the whole region.**
- **Dependence upon various laboratory, computational and practical skills that allow for the appreciation of the importance of scientific physical basics, fundamentals and theory. Available unique laboratory facilities serving energy topics, simulators and numerical simulation are covered in this program.**
- **Field trips and practical training.**





For more information, visit:

eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

Program Objectives:

- **To provide students with the understanding of fundamental knowledge prerequisite for the practice of, or for advanced today**
- **To provide the students with broad based professional education that covers the important current and developing issues in sustainable energy engineering and all related fields and applications, This is necessary for a productive career, and for being able to search and research in the spirit of continuing education in the field of sustainable energy engineering and allied areas**
- **To enable graduates to work not only in local markets new demand but also in regional (particularly, in the Arab and African regions) and international markets, acquiring logic thinking, and creativity.**

Sustainable Energy Engineers may work in:

- **Construction and infrastructure projects (Electromechanical works).**
- **Power stations and petrochemical plants**
- **Consultancy Services Design, operation, and maintenance in several engineers discipline.**
- **Energy audit and environmental impact assessment.**
- **Improve the software skills that can help graduate to solve many practical problems**
- **Petrochemical industries.**
- **Safety and environmental works.**

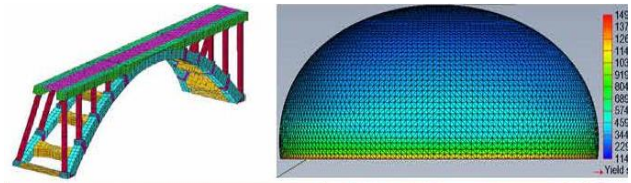
STRUCTURAL ENGINEERING [STE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

The STE program provides a broad, well-rounded, and high-quality education in Civil Engineering with emphasis on the profession of Structural Engineering and its specific areas of materials, mechanics, analysis and design. By completing the bachelor degree requirements, the graduates of the STE program will demonstrate professional competence and contribute in the future efforts for developing and maintaining the infrastructure and environment at the national, regional and international dimensions.

Key Features:

- **A variety of elective courses for students to fit their selected plan of study.**
- **Core courses in Management, Accounting, and Marketing to supplement the engineering skills.**
- **Application of analysis and design software to solve practical structural engineering problems.**
- **Practical training opportunities in multinational design companies and consultancy firms.**



For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering,
Giza, Arab Republic of Egypt.

Program Objectives:

The educational objectives of the Structural Engineering program are to prepare its graduates to:

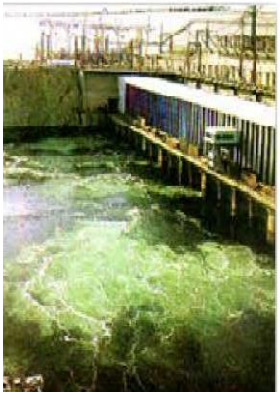
- **Perform successfully in a professional environment by utilizing and improving their technical knowledge, intellectual abilities and practical skills. Design, construct and select effective civil and structural systems by applying the fundamental principles and methods of structural engineering, as well as the principles of sustainability.**
- **Formulate, analyze and solve complex structural engineering problems by examining and appraising practical alternatives and by working individually or within multidisciplinary teams.**
- **Plan, schedule and supervise diverse engineering projects by integrating project management, risk management, information technology, and professional skills.**
- **Communicate effectively in engineering & business environments, & present high ethical standards.**
- **Continue career development through life-long learning, professional seminars and licensure.**

WATER ENGINEERING & ENVIRONMENT [WEE]

Bachelor Programs, Credit Hours System, Cairo University, Faculty of Engineering

Water is life and is one of the most precious natural resources on earth. Population growth and aspiration for improved standards of living impose higher pressure on available water resources and environmental systems. This is particularly true for Egypt, most of the Arab countries, and many nations all over the globe where water demands exceed the supplies.

In 2009 a new B.Sc. Degree in Civil Engineering with emphasis on Water Engineering and Environment (WEE for short) was established at Cairo University. The program prepares graduates with specialized training in hydrology, water resources, hydraulics, irrigation/drainage, Water & Wastewater (collection, treatment & disposal), and coastal engineering among other subjects. Graduates of the program are well prepared to address critical environmental issues involving interconnection among earth, water, climate as well as the interaction between these applied sciences and the human activities.



Key Features:

- **The study is fully in English. Extensive use of textbooks of international quality and IT facilities are encouraged.**
- **The education services are provided to small number of students. The numbers do not exceed 60 in a lecture, 30 in a tutorial and 15 for a laboratory.**
- **Egyptian students with cumulative GPA of 3.0 or higher are exempted from tuition & fees through scholarships provided by the Ministry of Water Resources & Irrigation and the Holding Company for Water & Wastewater.**
- **Compulsory courses in the water and environment areas include: Principles of Irrigation & Drainage, Fluid Mechanics, Water Chemistry & Microbiology, Open Channel Hydraulics, Computational Water & Wastewater networks, Introduction to Water Resources Engineering, Irrigation Design, River Engineering, Applied Hydrology, International Law of Water & Environment, Coastal & Harbor Engineering, Environmental Hydraulics, Field Measurements, EIA for Water Projects, On-Farm Irrigation Systems, and Integrated Water Resources Management.**
- **The program is supervised by the Department of Irrigation and Hydraulics with some 60 faculty members and 20 teaching assistants. Around 2/3 of the faculty members have obtained their PhD degrees from North American universities.**

For more information, visit:
eng.cu.edu.eg/en/credit-hour-system/

Cairo University, Faculty of Engineering, Giza, Arab Republic of Egypt.

BACHELOR PROGRAMS
CREDIT HOURS SYSTEM

CAIRO UNIVERSITY
FACULTY OF ENGINEERING

2020-2021